Postponed emergence: A possible survival tactic in the Orange-tip butterfly *Anthocharis cardamines* (Lep. : Pieridae)

During the spring of 1996, I spent a pleasant afternoon watching several female Orange-tip butterflies ovipositing on a bank of hedge mustard *Sisymbrium officinale* growing in a hedgerow near my home. Not having bred this species before, and having several plants of the same species growing in my garden, I decided to return at a later date to collect some of the larvae.

At the beginning of June 1996, I took some 35 larvae from this hedgerow and released them onto the plants in my garden. These were observed on a daily basis until they reached their final instar. By then, some 31 larvae remained. These were sleeved so as not to wander away, and left to pupate on the foodplant. All 31 larvae successfully pupated. In the autumn of 1996 the pupae were brought indoors and placed in the windowsill of a north-facing bedroom which remained unheated during the winter.

In the spring of 1997, 20 specimens emerged which were released into the garden. The remaining 11 pupae when tested with the tip of my tongue, all felt cold, an indication that they were still alive. These were left in the same location. In the spring of 1998 a further eight specimens emerged and were released. The last three pupae still felt cold when tested. Two of these emerged in April 1999. The remaining pupa is still alive.

The springs of 1997 and 1998 were both short, and frosts occured in late May of both years locally. The observed flight period of this butterfly was only two weeks each year rather than the normal four to five weeks. In neither year were any Orange-tip butterflies seen on the wing after the May frosts.

According to Emmet & Heath (1989. *The Moths and Butterflies of Great Britain & Ireland* **7**(1):116), pupae sometimes overwinter twice, the stage normally lasting 10-11 months. Is it possible that the change in weather conditions deferred the insects, emergence from the pupa until the conditions were more suitable? From the evidence of these bred pupae, it would appear that this is a definite possiblity. If this can happen in captivity, then surely it can happen in the wild!

This method of postponing emergence is well known in the Small Eggar *Eriogaster lanestris,* which has been reported to survive up to eight years in the pupal state, but I have been unable to find any reference in the entomological literature in relation to any British butterfly species being able to overwinter several years as a pupa.

If this postponement of emergence is possible in the Orange-tip, then it may occur in other butterfly species that overwinter in the pupal state. I would be interested to hear from anyone who has noted this phenomenon in any other British butterfly species.– HARRY T. EALES, 11 Ennerdale Terrace, Low Westwood, Derwentside, Co. Durham NE17 7PN.